

ABSTRACT

Disclosed is a ferromagnetic group IV-based semiconductor or a ferromagnetic group
III-V-based or group II-VI-based compound semiconductor, comprising a group IV-based
5 semiconductor or a group III-V-based or group II-VI-based compound semiconductor, which
contains at least one rare-earth metal element selected from the group consisting of Ce, Pr, Nd,
Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu. The ferromagnetic characteristic of the
ferromagnetic semiconductor is controlled by adjusting the concentration of the rare-earth
metal element, combining two or more of the rare-earth metal elements or adding a p-type or
10 n-type dopant. The present invention can provide a ferromagnetic group IV-based
semiconductor or a ferromagnetic group III-V-based or group II-VI-based compound
semiconductor which exhibits light transparency and stable ferromagnetic characteristics.